

Abstract

**Optical device with enhanced mechanical stability operating in the extreme
5 ultraviolet and lithography mask comprising such a device.**

An optical device reflecting a range of wavelengths comprised between 10nm and 20nm comprises alternate superposed first and second layers. The first layers are made of metal or metallic compound and the second layers are formed by an
10 amorphous silicon compound chosen from a-Si-H_x, a-Si-CH_x, a-Si-C_x, a-Si-OH_x, a-Si-F_x, a-Si-FH_x, a-Si-N_x, a-Si-NH_x, x being comprised between 0.01 and 0.3. The use of second layers of amorphous silicon compound enables the mechanical stresses of the optical device to be stabilized up to at least 200°C. The optical
15 device is preferably used as reflector for a lithography mask in the extreme ultraviolet (EUV).